

Worksheet 13 (More Integration) - Answers.

$$1. \int \frac{1}{1+\sin x} dx = \tan x - \sec x + K$$

$$2. \int \frac{1}{1-\sin x} dx = \tan x + \sec x + K.$$

$$3. \int \frac{1}{1+\cos x} dx = -\cot x + \csc x + K.$$

$$4. \int \frac{1}{1-\cos x} dx = -\cot x - \csc x + K.$$

$$5. \int \frac{\sec^2 x + \sec x \tan x}{\sec x + \tan x} dx = \ln |\sec x + \tan x| + K.$$

$$6. \int \sec x dx = \ln |\sec x + \tan x| + K.$$

$$7. \int \frac{1}{x \ln x} dx = \ln |\ln x| + K.$$

$$8. \int \frac{dx}{\sqrt{x}(1+\sqrt{x})^2} = -2(1+\sqrt{x})^{-1} + K.$$

$$9. \int \theta (1-3\theta^2)^{4/3} d\theta = -\frac{2}{15}(1-3\theta^2)^{5/4} + K.$$

$$10. \int x^5 \sqrt{1-x^2} dx = -\frac{1}{3}(1-x^2)^{3/2} + \frac{2}{5}(1-x^2)^{5/2} - \frac{1}{7}(1-x^2)^{7/2} + K$$

$$11. \int x \cos(3x^2) dx = \frac{1}{6} \sin(3x^2) + K$$

$$12. \int e^{3x} dx = \frac{1}{3} e^{3x} + K.$$

$$13. \int x^3 e^{(x^4)} dx = \frac{1}{4} e^{(x^4)} + K.$$

$$14. \int \frac{e^{\sqrt{x}}}{\sqrt{x}} dx = 2 e^{\sqrt{x}} + K.$$

$$15. \int \frac{x^3}{(4-x^4)^3} dx = \frac{1}{8} (4-x^4)^{-2} + K.$$

$$16. \int \frac{\sin \sqrt{\theta}}{\sqrt{\theta} \cos^3 \sqrt{\theta}} d\theta = \frac{4}{\sqrt{\cos(\sqrt{\theta})}} + K.$$

$$17. \int \sec^2 x \tan^2 x dx = \frac{1}{3} \tan^3 x + K.$$

$$18. \int \cot^7 x \csc^2 x dx = -\frac{1}{8} \cot^8 x + K.$$

$$19. \int \frac{\cos x}{1-\sin x} dx = -\ln|1-\sin x| + K$$

$$20. \int \frac{e^x}{1+e^x} dx = \ln|1+e^x| + K.$$

$$21. \int \frac{e^x + e^{-x}}{e^x - e^{-x}} dx = \ln|e^x - e^{-x}| + K.$$

$$22. \int \sec^2 x \tan x dx = \frac{1}{2} \tan^2 x + K$$

or $\int \sec^2 x \tan x dx = \frac{1}{2} \sec^2 x + C.$

$$23. \int \sin x \cos x \, dx = \frac{1}{2} \sin^2 x + K$$

$$\text{or } \int \sin x \cos x \, dx = -\frac{1}{2} \cos^2 x + C$$

$$24. \int \sqrt{3-4x} \, dx = -\frac{1}{6} (3-4x)^{3/2} + K.$$

25.